Jacob, Rebecca (ASRC) LC 121327

From: STIC-ILL
Sent: Friday, November 22, 2002 11:21 AM
To: Jacob, Rebecca (ASRC)
Subject: FW: ChemPort's Citation sent by savitr.mulpuri@uspto gov

AU: 2812

-----Original Message-----
From: [illegible] [mailto:[illegible]]
Sent: Friday, November 22, 2002 11:17 AM
To: STIC-ILL@uspto.gov
Subject: ChemPort's Citation sent by savitr.mulpuri@uspto.gov

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L5 ANSWER 1 OF 1 INSPEC COPYRIGHT 2002 IEE
AN 1998:6041574 INSPEC DN A9822-6855-009; B9811-0520F-055
TI SiC crystallization in carbonized Si(111) layers.
AU Lei Tianmin; Chen Zhiming; Ma Jianping; Yu Mingbin (Xi'an Univ. of Technol., Xi'an, China)
SO Chinese Journal of Semiconductors (April 1997) vol.18, no.4, p.317-20. 6 refs.
Published by: Science Press
CODEN: PTTPDZ ISSN: 0253-4177
SICI: 0253-4177(199704)18:4L.317:CCL;1-X
DT Journal
TC Experimental
CY China
LA Chinese
AB The surface of the silicon substrates on which 3C-SiC thin layers [illegible] epitaxially grown is carbonized by [illegible] carbide gas diluted with hydrogen in a HFCVD system, with a filament temperature of 2000 degrees C and a substrate temperature of 950 1100 degrees C. The carbonized layers were characterized by X-ray diffraction, electron diffraction and auger electron spectroscopy etc. It is found that the carbonized layers consist of a highly carbon-doped silicon sub-layer, a 3C-SiC crystalline sub-layer and a silicon-doped 3C-SiC crystalline sub-layer. Under the appropriate processing conditions, the proportion of 3C-SiC crystalline sub-layer can be adjusted.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A7920F Electron-surface impact: Auger emission; A8160C Surface treatment and degradation of semiconductors; B0520F Vapour deposition; B2520M Other semiconductor materials; B2550E Surface treatment for semiconductor devices
CT AUGER EFFECT; CHEMICAL VAPOUR DEPOSITION; CRYSTALLISATION; ELECTRON DIFFRACTION; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; SILICON COMPOUNDS; SURFACE TREATMENT; X-RAY DIFFRACTION
ST carbonized Si(111) layers; 3C SiC crystallization; epitaxial growth; HFCVD; X-ray diffraction; electron diffraction; Auger electron spectroscopy; 950 to 1100 [illegible]; Si; [illegible]
[illegible]
PHP [illegible]
ET [illegible]

=> FIL STNGUIDE
COST IN U.S. DOLLARS SINCE FILE ENTRY TOTAL [illegible]
FULL ESTIMATED COST [illegible]

FILE 'STNGUIDE' ENTERED AT 11:12:1[illegible] ON 22 NOV 20[illegible]

Cas 11/25

semiconductor devices; B2520M Other semiconductor materials

CT AUGER EFFECT; CRYSTAL ORIENTATION; HEAT TREATMENT; ORGANIC COMPOUNDS; REFLECTION HIGH ENERGY ELECTRON DIFFRACTION; SCANNING ELECTRON MICROSCOPY; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON; SILICON COMPOUNDS; SPECTROCHEMICAL ANALYSIS; SUBSTRATES; SURFACE STRUCTURE; SURFACE TREATMENT; WIDE BAND GAP SEMICONDUCTORS; X-RAY PHOTOELECTRON SPECTRA

ST SiC growth; substrate surface orientation; initial growth stage; sample temperatures; XPS; X-ray photoelectron spectroscopy; RHEED; reflection high energy electron diffraction; SEM; scanning electron microscopy; growth rate; surface structure; morphology; C2H4 molecular beam exposure; **carbonization**; 600 to 900 C; Si; SiC

CHI Si sur, Si el; SiC bin, Si bin, C bin

PHP temperature 8.73E+02 to 1.17E+03 K

ET C*Si; SiC; Si cp; cp; C cp; Si; C; C*H; C2H4; H cp

L17 ANSWER 4 OF 4 INSPEC COPYRIGHT 2002 IEE

AN 1993:4453374 INSPEC DN A9317-6855-056; B9309-0510D-033

TI Influence of temperature on the formation by reactive CVD of a **silicon** carbide buffer **layer** on **silicon**.

AU Becourt, N.; Ponthenier, J.L.; Papon, A.M.; Jaussaud, C. (CEA/DTA/LETI-85X, Grenoble, France)

SO Physica B (April 1993) vol.185, no.1-4, p.79-84. 8 refs.
Price: CCCC 0921-4526/93/$06.00
CODEN: PHYBE3 ISSN: 0921-4526
Conference: 7th Trieste Semiconductor Symposium on Wide-Band-Gap Semiconductors. Trieste, Italy, 8-12 June 1992

DT Conference Article; Journal

TC Experimental

CY Netherlands

LA English

AB Silicon carbide has been grown by VPE on (100) silicon substrates by the two-step method: after etching by hydrogen, **carbonization** is done using propane in hydrogen, then epitaxy can be realized using propane and silane in hydrogen. The **carbonization** layer has been studied by spectroscopic ellipsometry and cross-section transmission electron microscopy (XTEM). X-ray diffraction is used for epitaxial film characterization grown onto buffer layer. The influence of temperature on the formation of the **carbonization** layer has been studied: at low temperature (1200 degrees C) the growth proceeds via a two-dimensional mechanism, while at higher temperature (1340 degrees C) it is dominated by a three-dimensional mechanism. Detailed XTEM shows that the lattice mismatch between silicon and silicon carbide is accommodated by the formation of dislocations in the **carbonization** layer. The impact of the **carbonization** temperature on the crystalline quality of the SiC epitaxial film is also shown.

CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0510D Epitaxial growth; B2520M Other semiconductor materials

CT CVD COATINGS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON; SILICON COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY DIFFRACTION EXAMINATION OF MATERIALS

ST semiconductor; temperature; formation; reactive CVD; buffer layer; VPE; two-step method; **carbonization**; epitaxy; spectroscopic ellipsometry; cross-section transmission electron microscopy; XTEM; X-ray diffraction; two-dimensional mechanism; three dimensional mechanism; lattice mismatch; dislocations; 1200 degC; 1340 degC; SiC-Si

CHI SiC-Si int, SiC int, Si int, C int, SiC bin, Si bin, C bin, Si el

PHP temperature 1.47E+03 K; temperature 1.61E+03 K

ET C; C*Si; SiC; Si cp; cp; C cp; C sy 2; sy 2; Si sy 2; SiC-Si; Si

L13 ANSWER 23 OF 25 INSPEC COPYRIGHT 2002 IEE
AN 1988:3111190 INSPEC DN A88049495; B88024762
TI Selective **doped** polysilicon growth. Effect of carbon on the selective **doped silicon film** growth.
AU Mieno, F.; Furumura, Y.; Nishizawa, T.; Maeda, M. (Dept. of Proces Eng., Fujitsu Ltd., Kawasaki, Japan)
SC Journal of the Electrochemical Society (Nov. 1987) vol.134, no.11, p.2862-7. 8 refs.
CODEN: JESOAN ISSN: 0013-4651
DT Journal
TC Experimental
CY United States
LA English
AB The authors have announced selective polysilicon growth technology based on selective epitaxial growth technology. In this paper they report the influence of CH4-introduction on the crystallinity of silicon, the doping control with PH3, and the selective growth of silicon. It has become possible to control the transition from epitaxial silicon to polysilicon and beta -**SiC**. By achieving a definite doping control, the resistivity can be lowered to 1*10-3 Omega .cm. A combination of these technologies made it possible to grow selectively doped polysilicon with a flat surface.
CC A6170T Doping and implantation of impurities; A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0520F Vapour deposition; B2520C Elemental semiconductors; B2550B Semiconductor doping
CT CHEMICAL VAPOUR DEPOSITION; ELEMENTAL SEMICONDUCTORS; SEMICONDUCTOR DOPING; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON
ST semiconductor; methane; polysilicon growth; **selective doped silicon film growth**; selective epitaxial growth; crystallinity; doping control; selective growth; **beta -SiC**; resistivity; Si; **SiC**; PH3
CHI Si el; SiC bin, Si bin, C bin; PH3 bin, H3 bin, H bin, P bin
ET C*H; CH4; C cp; cp; H cp; H*P; PH3; P cp; C*Si; SiC; Si cp; Si; H; P

L13 ANSWER 18 OF 25 INSPEC COPYRIGHT 2002 IEE

AN 1994:4810821 INSPEC DN A9424-8630J-082; B9412-8420-194

TI Large area and rapid thermal zone melting crystallization of silicon films on graphite substrates for photovoltaic use.

AU Pauli, M.; Doscher, M.; Salentiny, G.; Homberg, F.; Muller, J. (Dept. of Semicond. Technol., Tech. Univ. Hamburg-Harburg, Germany)

SO Conference Record of the Twenty Third IEEE Photovoltaic Specialists Conference - 1993 (Cat. No.93CH3283-9)
New York, NY, USA: IEEE, 1993. p.195-200 of 1490 pp. 10 refs.
Conference: Louisville, KY, USA, 10-14 May 1993
Price: CCCC 0 7803 1220 1/93/$3.00
ISBN: 0-7803-1220-1

DT Conference Article

TC Experimental

CY United States

LA English

AB Crystallized silicon thin films deposited on a low cost substrate have the potential to be applied for thin film solar cells. Silicon films, deposited on graphite substrates by sputtering or by the pyrolytic decomposition of silane (CVD), have been crystallized from the liquid phase. The line shaped molten zone is created by the radiation of a line electron beam and is moved at constant scan velocity (23 mm/s) across the graphite substrate. During the crystallization process **silicon carbide** forms preferentially at gaseous inclusions in the silicon. Schottky-diodes were fabricated on the crystallized **silicon film**. The crystallized **silicon** films were found to be unintentionally p-**doped** with a **dopant** concentration of p=5*1017 cm-3 (sputter deposited) and p=8*1017 cm-3 (CVD). The crystallized silicon/graphite interface builds an ohmic contact.

CC A8630J Photoelectric conversion; solar cells and arrays; A8115C Deposition by sputtering; A8110H Zone melting and zone refining; A6855 Thin film growth, structure, and epitaxy; A8230L Decomposition reactions (pyrolysis, dissociation, and group ejection); A8115H Chemical vapour deposition; B8420 Solar cells and arrays; B2520C Elemental semiconductors; B0520F Vapour deposition; B2550B Semiconductor doping; B0510 Crystal growth

CT CHEMICAL VAPOUR DEPOSITION; CRYSTALLISATION; CVD COATINGS; ELEMENTAL SEMICONDUCTORS; OHMIC CONTACTS; PYROLYSIS; RAPID THERMAL PROCESSING; SEMICONDUCTOR DOPING; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON; SOLAR CELLS; SPUTTER DEPOSITION; SPUTTERED COATINGS; ZONE MELTING

ST thin film solar cells; rapid thermal zone melting crystallization; large-area; graphite substrates; sputtering; pyrolytic decomposition; silane; CVD; line shaped molten zone; line electron beam; constant scan velocity; gaseous inclusions; Schottky-diodes; fabrication; p-doped; ohmic contact; dopant; sputter deposit

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     FILE 'INSPEC' ENTERED AT 11:09:45 ON 22 NOV 2002
L1         11000 SILICON (1A)(LAYER OR FILM OR COATING)
L2        294160 DOP##### OR IMPUR########
L3          1980 L1 (P)L2
L4          3938 CARBONI#########
L5         28649 SIC
L6          9332 SILICON (A)CARBIDE
L7         29626 L5 OR L6
L8             1 L3 AND L4 AND L7

     FILE 'STNGUIDE' ENTERED AT 11:12:17 ON 22 NOV 2002
L9             0 DHIS

     FILE 'INSPEC' ENTERED AT 11:18:47 ON 22 NOV 2002

     FILE 'STNGUIDE' ENTERED AT 11:18:48 ON 22 NOV 2002

     FILE 'INSPEC' ENTERED AT 11:20:02 ON 22 NOV 2002
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L11            1 L10 AND L4
L12       628057 ALL
L13           25 L7 AND L10

     FILE 'INPADOC' ENTERED AT 11:34:14 ON 22 NOV 2002
L14            5 L13

     FILE 'INSPEC' ENTERED AT 11:35:44 ON 22 NOV 2002
L15          319 CARBONIZA######
L16            0 L1 AND L2 AND L15
L17            4 L1(P)L15

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L17 ANSWER 1 OF 4 INSPEC COPYRIGHT 2002 IEE
AN 2000:6547084 INSPEC DN A2000-09-6855-068; B2000-05-0520F-055
TI Research on the epitaxial growth technique of 3C-SiC on silicon substrates.
AU Li Yue-Jin; Yang Yin-Tang; Jia Hu-Jun; Zhu Zuo-Yun (Res. Inst. of Microelectron., Xidian Univ., Xi'an, China)
SO Journal of Xidian University (Feb. 2000) vol.27, no.1, p.80-2, 87. 2 refs.
Published by: Xidian Univ
CODEN: XDKXEP ISSN: 1001-2400
SICI: 1001-2400(200002)27:1L.80:REGT;1-N
DT Journal
TC Experimental
CY China
LA Chinese
AB The films of cubic SiC are heteroepitaxially grown by atmospheric pressure chemical vapor deposition (APCVD) on (100) Si substrates. To reduce the large lattice mismatch between cubic SiC and **silicon**, a buffer **layer** is made by carbonizing the surface of the Si substrate in the CVD system. An optimum condition for the buffer layer is determined. The characteristics of the samples have been measured and analyzed by X-ray diffraction, Auger electron spectroscopy (AES) and scanning electron microscopy (SEM). It is shown that the single crystals of cubic SiC are obtained at a substrate temperature of 1300 degrees C on Si substrate with the buffer layer prepared by **carbonization**.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0520F Chemical vapour deposition; B2520M Other semiconductor materials
CT AUGER ELECTRON SPECTROSCOPY; ELEMENTAL SEMICONDUCTORS; SCANNING ELECTRON MICROSCOPY; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY DIFFRACTION
ST epitaxial growth technique; heteroepitaxial growth; atmospheric pressure chemical vapor deposition; lattice mismatch; buffer layer; X-ray diffraction; Auger electron spectroscopy; scanning electron microscopy; substrate temperature; **carbonization**; 1300 degC; SiC-Si; Si
CHI SiC-Si int, SiC int, Si int, C int, SiC bin, Si bin, C bin, Si el; Si sur, Si el
PHP temperature 1.57E+03 K
ET C*Si; SiC; Si cp; cp; C cp; C-SiC; Si; C; C sy 2; sy 2; Si sy 2; SiC-Si

L17 ANSWER 2 OF 4 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE
AN 2000:6493122 INSPEC DN A2000-06-6855-118
TI Structural investigations of silicon carbide films formed by fullerene **carbonization** of silicon.
AU Volz, K.; Schreiber, S.; Zeitler, M.; Rauschenbach, B.; Stritzker, B. (Inst. fur Phys., Augsburg Univ., Germany); Ensinger, W.
SO Surface and Coatings Technology (15 Dec. 1999) vol.122, no.2-3, p.101-7. 14 refs.
Doc. No.: S0257-8972(99)00250-9
Published by: Elsevier
Price: CCCC 0257-8972/99/$20.00
CODEN: SCTEEJ ISSN: 0257-8972
SICI: 0257-8972(19991215)122:2/3L.101:SISC;1-D
DT Journal
TC Experimental
CY Switzerland
LA English
AB Silicon carbide films with a thickness of up to half a micron have been formed on silicon substrates by evaporating fullerene (C60) molecules onto the heated substrates (Tcor=800 degrees C). Rutherford backscattering spectrometry (RBS) shows the 1:1 stoichiometry of Si:C in all cases. The

phase composition and microstructure of the films have been investigated by X-ray pole figure measurements and by cross-sectional transmission electron microscopy (XTEM). The pole figure measurements show that the silicon carbide mainly consists of hexagonal phases with the hexagonal unit cell declined at about 17 degrees with respect to the surface. XTEM analysis confirms this observation, as columnar growth of hexagonal SiC platelets with the platelets being declined with respect to the surface is seen. With this **carbonization** technique, silicon carbide films can be deposited at comparably low temperatures onto several materials, if prior to **carbonization** a **silicon film** has been evaporated.

CC A6855 Thin film growth, structure, and epitaxy; A6480E Stoichiometry and homogeneity; A8115G Vacuum deposition; A8140E Cold working, work hardening; post-deformation annealing, recovery and recrystallisation; textures

CT CRYSTAL MICROSTRUCTURE; FULLERENES; POLYMORPHISM; RUTHERFORD BACKSCATTERING; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON COMPOUNDS; STOICHIOMETRY; TEXTURE; TRANSMISSION ELECTRON MICROSCOPY; VACUUM DEPOSITED COATINGS; WEAR RESISTANT COATINGS; WIDE BAND GAP SEMICONDUCTORS; X-RAY DIFFRACTION

ST silicon carbide films; **Si fullerene carbonization**; silicon substrates; fullerene evaporation; substrates heating; Rutherford backscattering spectrometry; film stoichiometry; phase composition; microstructure; X-ray pole figures; cross-sectional TEM; cross-sectional transmission electron microscopy; hexagonal phases; unit cell orientation; hexagonal SiC columnar growth; platelets-substrate orientation; low temperature deposition; 800 C; SiC; Si; C60

CHI SiC bin, Si bin, C bin; Si sur, Si el; C60 el, C el

PHP temperature 1.07E+03 K

ET C; C*Si; Si:C; C doping; doped materials; SiC; Si cp; cp; C cp; Si

L17 ANSWER 3 OF 4 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE

AN 1998:5928964 INSPEC DN A9813-6855-074; B9807-0510D-069

TI Study of initial stage of SiC growth on Si(100) surface by XPS, RHEED and SEM.

AU Takaoka, T.; Saito, H.; Igari, Y.; Kusunoki, I. (Res. Inst. for Sci. Meas., Tohoku Univ., Sendai, Japan)

SO Materials Science Forum (1998) vol.264-268, pt.1, p.203-6. 2 refs.
Published by: Trans Tech Publications
CODEN: MSFOEP ISSN: 0255-5476
SICI: 0255-5476(1998)264/268:1L.203:SISG;1-K
Conference: Silicon Carbide, III-Nitrides and Related Materials. 7th International Conference. Stockholm, Sweden, 31 Aug-5 Sept 1997
Sponsor(s): Linkoping Univ.; ABB Asea Brown Boveri; Cree Res.; Okmetik Oy; Epigress AB; et al

DT Conference Article; Journal

TC Experimental

CY Switzerland

LA English

AB Initial stage of SiC growth on Si(100) surface at sample temperatures between 600 and 900 degrees C was studied using XPS (X-ray photoelectron spectroscopy), RHEED (reflection high energy electron diffraction), and SEM (scanning electron microscopy). Growth rate of **silicon** carbide **film**, and surface structure and morphology during the reaction were observed.

CC A6855 Thin film growth, structure, and epitaxy; A6150J Crystal morphology and orientation; A6820 Solid surface structure; A7920F Electron-surface impact: Auger emission; A7920N Atom-, molecule-, and ion-surface impact; A8280D Electromagnetic radiation spectrometry (chemical analysis); A8280P Electron spectroscopy for chemical analysis (photoelectron, Auger spectroscopy, etc.); A8160C Surface treatment and degradation of semiconductors; B0510D Epitaxial growth; B2550E Surface treatment for

L17 ANSWER 1 OF 4 INSPEC COPYRIGHT 2002 IEE
AN 2000:6547084 INSPEC DN A2000-09-6855-068; B2000-05-0520F-055
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AU Li Yue-Jin; Yang Yin-Tang; Jia Hu-Jun; Zhu Zuo-Yun (Res. Inst. of Microelectron., Xidian Univ., Xi'an, China)
SO Journal of Xidian University (Feb. 2000) vol.27, no.1, p.80-2, 87. 2 refs.
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SICI: 1001-2400(200002)27:1L.80:REGT;1-N
DT Journal
TC Experimental
CY China
LA Chinese
AB The films of cubic SiC are heteroepitaxially grown by atmospheric pressure chemical vapor deposition (APCVD) on (100) Si substrates. To reduce the large lattice mismatch between cubic SiC and **silicon**, a buffer **layer** is made by carbonizing the surface of the Si substrate in the CVD system. An optimum condition for the buffer layer is determined. The characteristics of the samples have been measured and analyzed by X-ray diffraction, Auger electron spectroscopy (AES) and scanning electron microscopy (SEM). It is shown that the single crystals of cubic SiC are obtained at a substrate temperature of 1300 degrees C on Si substrate with the buffer layer prepared by **carbonization**.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0520F Chemical vapour deposition; B2520M Other semiconductor materials
CT AUGER ELECTRON SPECTROSCOPY; ELEMENTAL SEMICONDUCTORS; SCANNING ELECTRON MICROSCOPY; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY DIFFRACTION
ST epitaxial growth technique; heteroepitaxial growth; atmospheric pressure chemical vapor deposition; lattice mismatch; buffer layer; X-ray diffraction; Auger electron spectroscopy; scanning electron microscopy; substrate temperature; **carbonization**; 1300 degC; SiC-Si; Si
CHI SiC-Si int, SiC int, Si int, C int, SiC bin, Si bin, C bin, Si el; Si sur, Si el
PHP temperature 1.57E+03 K
ET C*Si; SiC; Si cp; cp; C cp; C-SiC; Si; C; C sy 2; sy 2; Si sy 2; SiC-Si

L17 ANSWER 2 OF 4 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE
AN 2000:6493122 INSPEC DN A2000-06-6855-018
TI Structural investigations of silicon carbide films formed by fullerene **carbonization** of silicon.
AU Volz, K.; Schreiber, S.; Zeitler, M.; Rauschenbach, B.; Stritzker, B. (Inst. fur Phys., Augsburg Univ., Germany); Ensinger, W.
SO Surface and Coatings Technology (15 Dec. 1999) vol.122, no.2-3, p.101-7. 14 refs.
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Published by: Elsevier
Price: CCCC 0257-8972/99/$20.00
CODEN: SCTEEJ ISSN: 0257-8972
SICI: 0257-8972(19991215)122:2/3L.101:SISC;1-D
DT Journal
TC Experimental
CY Switzerland
LA English
AB Silicon carbide films with a thickness of up to half a micron have been formed on silicon substrates by evaporating fullerene (C60) molecules onto the heated substrates (T>or=800 degrees C). Rutherford backscattering spectrometry (RBS) shows the 1:1 stoichiometry of Si:C in all cases. The

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PHP temperature 1.07E+03 K

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AN 1998:5928964 INSPEC DN A9813-6855-074; B9807-0510D-069

TI Study of initial stage of SiC growth on Si(100) surface by XPS, RHEED and SEM.

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SO Materials Science Forum (1998) vol.264-268, pt.1, p.203-6. 2 refs.
Published by: Trans Tech Publications
CODEN: MSFOEP ISSN: 0255-5476
SICI: 0255-5476(1998)264/268:1L.203:SISG;1-K
Conference: Silicon Carbide, III-Nitrides and Related Materials. 7th International Conference. Stockholm, Sweden, 31 Aug-5 Sept 1997
Sponsor(s): Linkoping Univ.; ABB Asea Brown Boveri; Cree Res.; Okmetik Oy; Epigress AB; et al

DT Conference Article; Journal

TC Experimental

CY Switzerland

LA English

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semiconductor devices; B2520M Other semiconductor materials
CT AUGER EFFECT; CRYSTAL ORIENTATION; HEAT TREATMENT; ORGANIC COMPOUNDS; REFLECTION HIGH ENERGY ELECTRON DIFFRACTION; SCANNING ELECTRON MICROSCOPY; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON; SILICON COMPOUNDS; SPECTROCHEMICAL ANALYSIS; SUBSTRATES; SURFACE STRUCTURE; SURFACE TREATMENT; WIDE BAND GAP SEMICONDUCTORS; X-RAY PHOTOELECTRON SPECTRA
ST SiC growth; substrate surface orientation; initial growth stage; sample temperatures; XPS; X-ray photoelectron spectroscopy; RHEED; reflection high energy electron diffraction; SEM; scanning electron microscopy; growth rate; surface structure; morphology; C2H4 molecular beam exposure; **carbonization**; 600 to 900 C; Si; SiC
CHI Si sur, Si el; SiC bin, Si bin, C bin
PHP temperature 8.73E+02 to 1.17E+03 K
ET C*Si; SiC; Si cp; cp; C cp; Si; C; C*H; C2H4; H cp

L17 ANSWER 4 OF 4 INSPEC COPYRIGHT 2002 IEE
AN 1993:4453374 INSPEC DN A9317-6855-056; B9309-0510D-033
TI Influence of temperature on the formation by reactive CVD of a **silicon** carbide buffer **layer** on **silicon**.
AU Becourt, N.; Ponthenier, J.L.; Papon, A.M.; Jaussaud, C. (CEA/DTA/LETI-85X, Grenoble, France)
SO Physica B (April 1993) vol.185, no.1-4, p.79-84. 8 refs.
Price: CCCC 0921-4526/93/$06.00
CODEN: PHYBE3 ISSN: 0921-4526
Conference: 7th Trieste Semiconductor Symposium on Wide-Band-Gap Semiconductors. Trieste, Italy, 8-12 June 1992
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB Silicon carbide has been grown by VPE on (100) silicon substrates by the two-step method: after etching by hydrogen, **carbonization** is done using propane in hydrogen, then epitaxy can be realized using propane and silane in hydrogen. The **carbonization** layer has been studied by spectroscopic ellipsometry and cross-section transmission electron microscopy (XTEM). X-ray diffraction is used for epitaxial film characterization grown onto buffer layer. The influence of temperature on the formation of the **carbonization** layer has been studied: at low temperature (1200 degrees C) the growth proceeds via a two-dimensional mechanism, while at higher temperature (1340 degrees C) it is dominated by a three-dimensional mechanism. Detailed XTEM shows that the lattice mismatch between silicon and silicon carbide is accommodated by the formation of dislocations in the **carbonization** layer. The impact of the **carbonization** temperature on the crystalline quality of the SiC epitaxial film is also shown.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0510D Epitaxial growth; B2520M Other semiconductor materials
CT CVD COATINGS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON; SILICON COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY DIFFRACTION EXAMINATION OF MATERIALS
ST semiconductor; temperature; formation; reactive CVD; buffer layer; VPE; two-step method; **carbonization**; epitaxy; spectroscopic ellipsometry; cross-section transmission electron microscopy; XTEM; X-ray diffraction; two-dimensional mechanism; three-dimensional mechanism; lattice mismatch; dislocations; 1200 degC; 1340 degC; SiC-Si
CHI SiC-Si int, SiC int, Si int, C int, SiC bin, Si bin, C bin, Si el
PHP temperature 1.47E+03 K; temperature 1.61E+03 K
ET C; C*Si; SiC; Si cp; cp; C cp; C sy 2; sy 2; Si sy 2; SiC-Si; Si